Abstract Submitted
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**Tailoring magnetic anisotropy in ferromagnetic metal / semiconductor contacts for spin injection**[1] C. H. LI, G. KIOSEOGLOU, A. T. HANBICKI, T. J. ZEGA, R. M. STROUD, B. T. JONKER, Naval Research Lab, Washington, DC — Robust spin injection across an Fe/AlGaAs interface has recently been demonstrated, producing an electron spin polarization >32% in a GaAs QW. In an effort to incorporate a spin injecting metal contact with perpendicular remanence and to explore interface effects on spin injection, we have grown MnGa thin films epitaxially on GaAs(001) LED structures by MBE. Streaky RHEED patterns indicate single crystalline films. Although lattice matched to GaAs, TEM shows that while MnGa crystallizes nicely away from the interface, defects exist at the interface. The insertion of a thin ($\sim$ 5ML) Fe seed layer between MnGa and AlGaAs promotes the initial nucleation of MnGa and provides a means to control the structure of the spin-injecting interface, while the magnetic behavior is determined by the MnGa. Samples are processed to form surface emitting LEDs, and the EL is dominated by QW excitonic emission. A 0.5% remanent circular polarization is observed, which tracks the MnGa magnetization obtained by independent SQUID measurements. Comparison between MnGa spin-LEDs with and without the Fe seed layer (including interface properties), and magneto absorption effects in these heterostructures, will be discussed.

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C. H. Li
Naval Research Lab, Washington, DC

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